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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,825	06/26/2006	Takeaki Itsuji	03500.119202.	1972

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EXAMINER	
RAMDHANIE, BOBBY	
ART UNIT	PAPER NUMBER
1797	
MAIL DATE	DELIVERY MODE
11/26/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/596,825	ITSUJI ET AL.	
	Examiner	Art Unit	
	BOBBY RAMDHANIE	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3 and 5-14* is/are pending in the application.

4a) Of the above claim(s) *8 and 9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5-7 and 10-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Election/Restrictions

Applicant's election without traverse of Claims 1-7; Group I, in the reply filed on 08/07/2008 is acknowledged.

Response to Amendment

1. Applicant's arguments with respect to claims 1, 3, 5, 6, 7, 10, 11, 12, 13, & 14 have been considered but are moot in view of the new ground(s) of rejection. The new grounds of rejection are a result of applicants' amendments to the Claims.

Specification

2. The disclosure is objected to because of the following informalities: The ejection means for ejecting is not disclosed.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 11, 13, & 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Specification does not disclose the ejection means for ejecting.

5. Claims 11, 13, & 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear to the Examiner what the scope of the ejection means for ejecting may encompass.

Response to Amendment

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 3, 5, 7, 12, & 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagel et al (2002).

8. Applicants' claims are toward a sensor.

9. Regarding Claims 1, 3, 5, 7, 12, & 14, Nagel et al discloses the sensor comprising: A). A waveguide for allowing an electromagnetic wave to propagate

therethrough and allowing an object to be disposed at a plurality of positions thereof (See Page 154, Right Column 1st Paragraph); B). A detecting portion for detecting the electromagnetic wave which has interacted with the object at the plurality of positions and propagated through the waveguide (See Page 155, Left Column 1st Paragraph, probe tip); and C). An object disposing means for disposing the object at the plurality of positions, the object disposing means being periodically disposed at intervals of an order of a wavelength of the electromagnetic wave such that the object and the electromagnetic wave propagating through the waveguide interact with each other, wherein a property of the object is analyzed or identified based on information obtained from the electromagnetic wave detected by the detecting portion (See Page 155, Left Column, lines 12-18, three microstrips).

10. Additional Disclosures Included: Claim 3: The disposing means comprises any one of a drop means for dropping the object at the plurality of positions, a protrusion shape pattern, and a pattern including a hydrophilic portion and a hydrophobic portion (See Figure 1; Gold); Claim 5: A sensing apparatus having a plurality of the sensor set forth in claim 1 arranged in an array (See Page 155, Left Column, lines 12-18, three microstrips); Claim 7: Means for coupling the electromagnetic wave into the waveguide for allowing the electromagnetic wave to propagate therethrough (See Page 155, Left Column, 1st Paragraph); Claim 12: Nagel et al discloses the sensor comprising: A). A waveguide for allowing an electromagnetic wave of 30 GHz to 30 THz to propagate therethrough and allowing an object disposed thereon to be sensed (See Figure 1); B). An object disposing means for disposing the object on the waveguide (See Page 155

Left Column pipetting implies a pipettor & lines 12-18 or the metal microstrip); and C). A detecting portion for detecting the electromagnetic wave which has propagated through the waveguide (See Page 155, Left Column, probe); D). Wherein the object disposing means comprises a protrusion shape pattern or a pattern including a hydrophilic portion and a hydrophobic portion, for disposing the object at a plurality of positions on the waveguide located at intervals such that the object and the electromagnetic wave propagating through the waveguide interact with each other (See Figure 1, Gold/Titanium metal and the BCB layers have hydrophobic and hydrophilic regions); Claim 14: Nagel et al discloses the sensor comprising: A). A waveguide for allowing an electromagnetic wave of 30 GHz to 30 THz to propagate therethrough and allowing an object disposed thereon to be sensed (See Figure 1); B). An object disposing means for disposing the object on the waveguide (See Page 155 Left Column pipetting implies a pipettor & lines 12-18 or the metal microstrip); and C). A detecting portion for detecting the electromagnetic wave which has propagated through the waveguide (See Page 155 Left Column probe), wherein D). The object disposing means comprises any one of an ejection means for ejecting the object, a protrusion shape pattern, and a pattern including a hydrophilic portion and a hydrophobic portion, for disposing the object at a plurality of positions on the waveguide located at intervals such that the object and the electromagnetic wave propagating through the waveguide interact with each other (See Figure 1).

11. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Stewing et al (2003).

12. Applicants' claim is toward a sensor.

13. Regarding Claim 1, Stewing et al discloses the sensor comprising: A). A waveguide for allowing an electromagnetic wave to propagate therethrough and allowing an object to be disposed at a plurality of positions thereof (See Page 80 Figure 2); B). A detecting portion for detecting the electromagnetic wave which has interacted with the object at the plurality of positions and propagated through the waveguide (See Figure 2 GaAs Spot relating to the Detector beam); and C). An object disposing means for disposing the object at the plurality of positions, the object disposing means being periodically disposed at intervals of an order of a wavelength of the electromagnetic wave such that the object and the electromagnetic wave propagating through the waveguide interact with each other, wherein a property of the object is analyzed or identified based on information obtained from the electromagnetic wave detected by the detecting portion (See Figure 2 area where DNA spot is located).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

16. Determining the scope and contents of the prior art.
17. Ascertaining the differences between the prior art and the claims at issue.
18. Resolving the level of ordinary skill in the pertinent art.
19. Considering objective evidence present in the application indicating obviousness or nonobviousness.

20. Claims 6, 11, & 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagel et al (2002).

21. Applicants' claims are toward a device.

22. For Claim 6, Nagel et al discloses the sensing apparatus comprising: the sensor set forth in claim 1, except for a storage portion for storing information associated with the property of the object, wherein the information obtained by the detecting portion and the information stored in the storage portion are used to analyze or identify the property of the object. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the sensing apparatus to have a storage portion for storing information associated with the property of the object, wherein the information obtained by the detecting portion and the information stored in the storage portion are used to analyze or identify the property of the object because Nagel et al discloses that the measured data is convertered to the frequency domain by fast Fourier transformation to derive the frequency dependent transmission parameters (S_{21}) (See Page 155, Left Column. The measurements and calculations imply a storage portion for the data to be stored and analyzed).

23. For Claim 11, Nagel et al discloses the sensor comprising: A). A waveguide for allowing an electromagnetic wave of 30 GHz to 30 THz to propagate therethrough (See Figure 1 & Page 155 Left Column lines 1-2) and B). Allowing an object disposed thereon to be sensed (See Figure 1 DNA); C). An object disposing means for disposing the object on the waveguide (See Page 155 Left Column lines 12-18); and D). A detecting portion for detecting the electromagnetic wave which has propagated through the waveguide (See Page 155 Left Column probe). Nagel et al does not disclose E). wherein the object disposing means comprises an ejection means for ejecting and disposing the object at a plurality of positions on the waveguide located at intervals such that the object and the electromagnetic wave propagating through the waveguide interact with each other. Nagel et al does however disclose a separate second object disposing means comprises an ejection means for ejecting and disposing the object at a plurality of positions on the waveguide located at intervals such that the object and the electromagnetic wave propagating through the waveguide interact with each other (See Page 155, Left Column lines 19-21, pipetting implies a pipettor which comprises an ejector means for to eject the droplet of the DNA sample onto the waveguide). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the object disposing means with an ejection means to remove the object from the microstrip after analysis.

24. For Claim 13, Nagel et al discloses the sensing apparatus for sensing an object by using a sensor and information obtained from a detection portion constituting the sensor, which comprises: A). A sensor comprising a waveguide for allowing an

electromagnetic wave of 30 GHz to 30 THz to propagate therethrough and allowing an object disposed thereon to be sensed (See Figure 1); and B). A detecting portion for detecting the electromagnetic wave which has propagated through the waveguide (See Page 155 Left Column pipetting implies a pipettor & lines 12-18 or the metal microstrip). Nagel et al does not explicitly disclose C). An ejection means for disposing the object at a plurality of positions on the waveguide located at intervals such that the object and the electromagnetic wave propagating through the waveguide interact with each other; and D). A storage portion for storing information associated with a property of the object, wherein information obtained by the detecting portion and the information stored in the storage portion are used to analyze or identify the property of the object. Nagel et al does however disclose a separate second object disposing means comprises an ejection means for ejecting and disposing the object at a plurality of positions on the waveguide located at intervals such that the object and the electromagnetic wave propagating through the waveguide interact with each other (See Page 155, Left Column lines 19-21, pipetting implies a pipettor which comprises an ejector means for to eject the droplet of the DNA sample onto the waveguide). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the object disposing means with an ejection means to remove the object from the microstrip after analysis. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the sensing apparatus to have a storage portion for storing information associated with the property of the object, wherein the information obtained by the detecting portion and the information stored in the storage portion are

used to analyze or identify the property of the object because Nagel et al discloses that the measured data is convertered to the frequency domain by fast Fourier transformation to derive the frequency dependent transmission parameters (S_{21}) (See Page 155, Left Column. The measurements and calculations imply a storage portion for the data to be stored and analyzed).

25. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stewing et al (2003).

26. Applicants' claim is toward a device.

27. Regarding Claim 10, Stewing et al discloses the sensor according to Claim 1 except wherein the object disposing means has a structure in which the object is disposed in the minute gap at a pitch corresponding to a half of the wavelength of the electromagnetic wave. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the pitch of the minute gap to correspond to a half of the wavelength of the electromagnetic wave as a design choice to cure the problem disclosed by Stewing of severe amounts of unused DNA material being deposited (See Page 80, Left Column 1st Paragraph).

Telephonic Inquiries

28. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

29. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

30. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BOBBY RAMDHANIE whose telephone number is (571)270-3240. The examiner can normally be reached on Mon-Fri 8-5 (Alt Fri off).

31. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

32. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. R./

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797